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(56) Documents Cited

GB 2314112 A

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GB 2138478 A

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(58) Field of Search

UK CL (Edition Q) E1J JGR

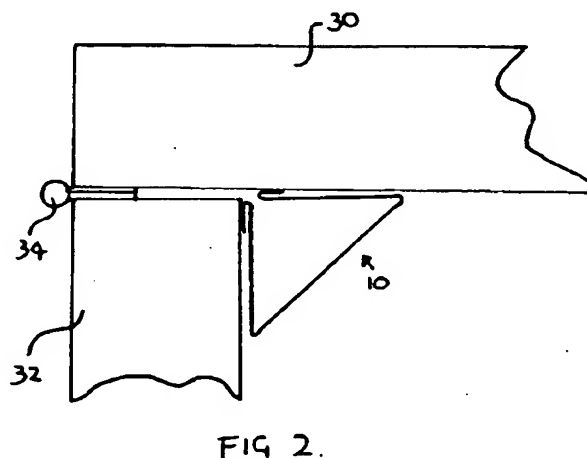
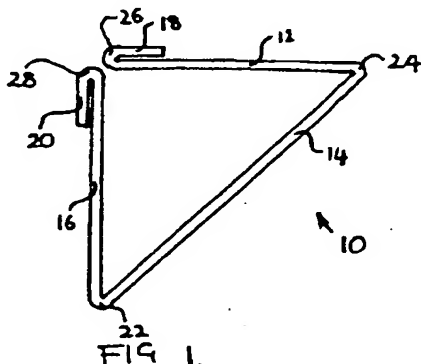
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ONLINE: WPI, PAJ, EPODOC

(54) Abstract Title

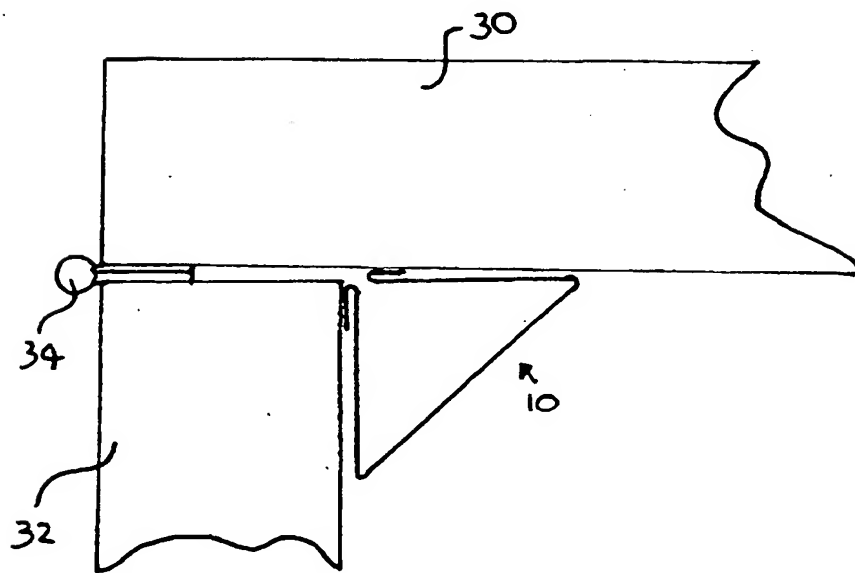
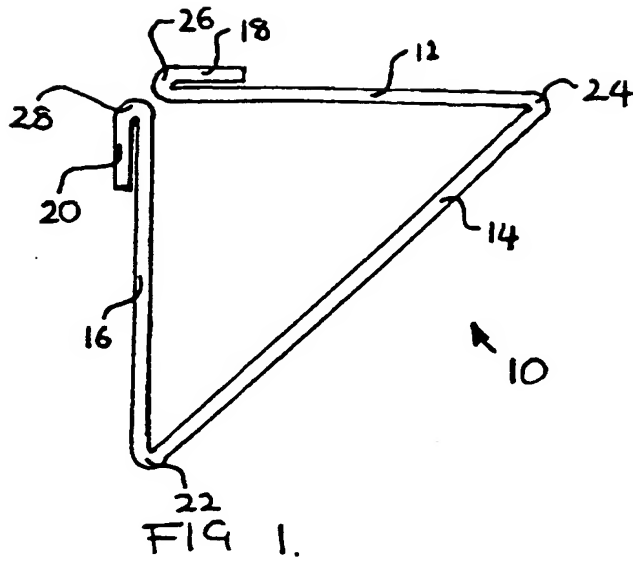
Finger protector device

(57) The present invention provides a finger protector device which may be used on the hinged side of a door, and comprises first (12), second (14), and third (16) members. The second member is connected between the first and third members by flexible means (22,24), and the first and third members are arranged in use to be mounted to surfaces which are capable of moving relative to each other. These surfaces may for example be a door (30) and frame member (32). The mounting portions (18,20) may be of a greater thickness than the first, second and third members, and may be connected to the first and third members by similar flexible means. These flexible means may be pre-biased so that the mounting portions are at about 90° relative to the member to which they are attached. The mounting portions may also be retained in slots positioned upon the movable surfaces.



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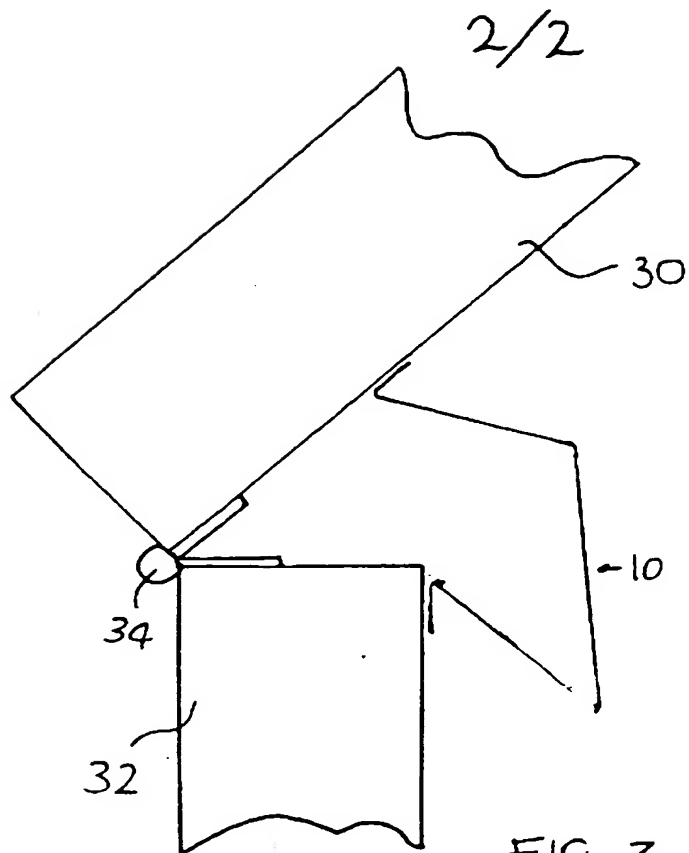


FIG 3.

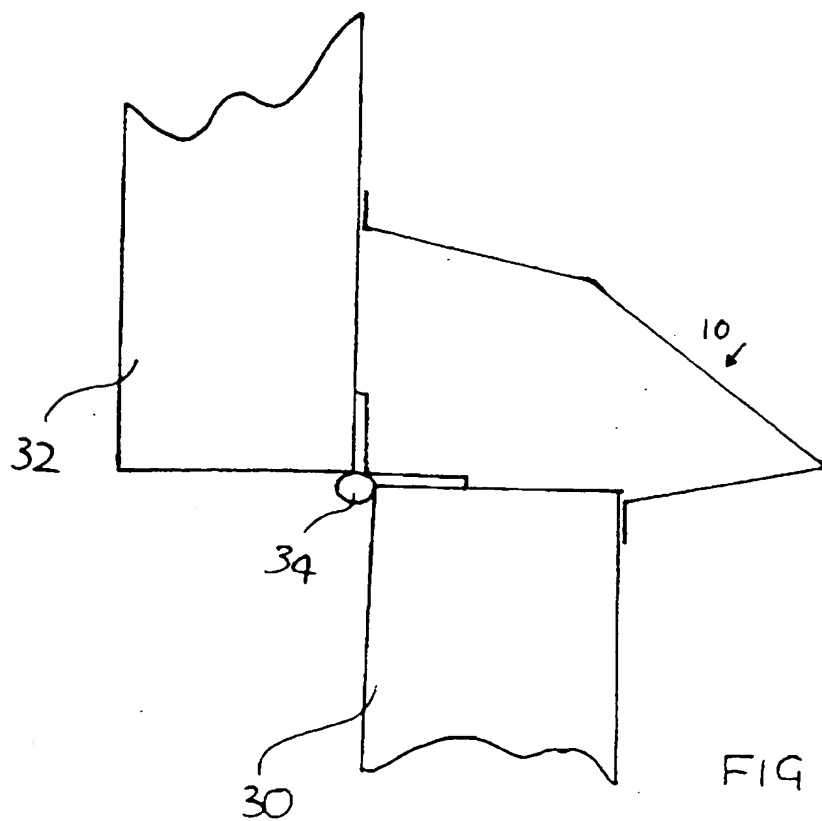


FIG 4.

FINGER PROTECTOR DEVICE

Field of the Invention

5           The invention relates to finger protector devices, especially (but not limited to) finger protector devices for door hinges.

Background to the Invention

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Hinge mechanisms for doors and similar openings are generally arranged such that on opening the door a gap is formed between the internal face of the door and the adjacent door frame. On closing the door this gap is  
15 inevitably reduced until the door is closed. Therefore, during closing any objects protruding into the gap are squeezed or trapped. This is a frequent cause of accidents whereby fingers are trapped between the door and adjacent door frame. Such accidents can be painful and can result  
20 in serious injuries. These accidents can be especially commonplace and distressing for young children. Furthermore, the use of doors comprising automatic closing means, such as springs, can result in high closing forces.

25           It is an aim of the present invention to overcome or obviate at least one problem associated with the prior art, whether referred to herein or otherwise.

Summary of the Invention

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According to the present invention there is provided a finger protector device comprising first, second and third members, the second member being connected between the

first and third members by flexible means, the first member is arranged, in use, to be mounted to a first surface and the third member is arranged, in use, to be mounted to a second surface, in which relative movement of the first and  
5 second surfaces is possible.

The flexible means may provide a pivotal connection.

The relative movement of the first and second surfaces  
10 may create or close a gap between the surfaces.

The first surface may be a door. Suitably the second surface is a door frame.

15 The first, second and third members may be elongate members.

The first member may have a mounting portion connected thereto and suitably connected by flexible means. The  
20 third member may have a mounting portion connected thereto and suitably connected by flexible means. The or each mounting portion or portions may be thicker than the first, second and third members. This assists in fixing the device to a door or frame. The or each mounting portion or  
25 portions may be attached to a member by a flexible plastics joint which is pre-biased at about 90° relative to the member to which it or they is or are attached.

The first and second surfaces may have slots mounted  
30 thereto in order to engage the mounting portions of the first and third faces respectively.

The door frame may be connected to a first mounting portion which is pivotally connected to the first member which is pivotally connected to the second member which is pivotally connected to a third member which is pivotally connected to a second mounting portion which is connected to a door, in which the first, second and third members and the first and second mounting portions are all elongate members, and in which the finger protector device has a substantially uniform cross-section along its length.

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#### Brief Description of the Drawings

The present invention will now be described by way of example only, with reference to the drawings that follow in which:

15

Figure 1 is a cross-section of a safety device for a door.

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Figure 2 is a cross-section of a door in a closed position with a safety device attached.

Figure 3 is a cross-section of a door in a partially open position with a safety device attached.

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Figure 4 is a cross-section of a door in an open position with a safety device attached.

#### Description of the Preferred Embodiments

30

As shown in Figure 1, the cross-section of the safety device 10 is approximately a right angled triangle. However, prior to formation the safety device 10 is

substantially planar. The sides of the safety device 10 are formed from elongate strips of a suitable plastics material. Hinge sections 22, 24 connect the first side 16 to the second side 14 and the third side 12 to the second side 14 respectively. The hinge sections 22, 24 are formed from a flexible material. The use of flexible hinge sections reduce the opportunity of any pinching action which may result from mechanical hinge sections.

10 Connecting portions 18, 20 are provided to mount the safety device 10 to a door 30 and adjacent frame 32 or wall. The connecting portions 18, 20 are connected to the first and third sides 16, 12 by flexible hinge sections 28, 26 respectively. Connecting portions 18, 20 may be made  
15 thicker than sides 12, 14, 16 to assist in mounting. To assist in mounting and in the motion of the device, the flexible joints joining connecting portions 18, 20 to sides 12, 16 respectively may be pre-biased to about 90°.

20 In order to mount the safety device 10 to a door 30 and adjacent frame 32 slots (not shown) are initially affixed to the door 30 at an inner position and to an adjacent position on the frame 32, as shown in Figure 2. The safety device 10 can then be mounted by securing the  
25 connecting portions 18, 20 in the respective slots (not shown).

Alternatively, and as a preferred option with thicker connecting portions 18, 20 holes (not shown) may be  
30 provided in the connecting portions to allow for screw fixing.

Once mounted the connecting portion 18 will move corresponding to the movement of the door 30 whilst the connecting portion 20 will remain affixed to the frame. The flexible hinge sections 22, 24, 26, 28 enable the safety device 10 to reconfigure according to the relative orientation of the door 30 and the frame 32. As shown in Figure 2, when the door 30 is in a closed position the safety device 10 adopts a right angle triangle cross-section. Approximations of the cross-sections of the safety device 10 with the door 30 in a partially open position and providing a 90° open position are shown in Figure 3 and Figure 4 respectively. It can be seen that at all times during the opening of the door 30 the safety device 10 prevents access to the gap formed between the inner face of the door 30 and the adjacent door frame 32. Therefore, on the subsequent closing of the door 30 there is no opportunity for objects, especially fingers, to be trapped between the door 30 and the frame 32.

The configuration of the safety device 10 also enables the safety device 10 to function during opening angles substantially greater than 90°. The configuration of the safety device 10 also enables the safety device 10 to be mounted on an adjacent frame which is not at a right angle to the door, for example a bevelled frame or a flat frame.

The reader's attention is directed to all papers and documents which are filed concurrently with or previous to this specification in connection with this application and which are open to public inspection with this specification, and the contents of all such papers and documents are incorporated herein by reference.



All of the features disclosed in this specification (including any accompanying claims, abstract and drawings), and/or all of the steps of any method or process so disclosed, may be combined in any combination, except  
5 combinations where at least some of such features and/or steps are mutually exclusive.

Each feature disclosed in this specification (including any accompanying claims, abstract and drawings),  
10 may be replaced by alternative features serving the same, equivalent or similar purpose, unless expressly stated otherwise. Thus, unless expressly stated otherwise, each feature disclosed is one example only of a generic series of equivalent or similar features.

15

The invention is not restricted to the details of the foregoing embodiment(s). The invention extends to any novel one, or any novel combination, of the features disclosed in this specification (including any accompanying  
20 claims, abstract and drawings), or to any novel one, or any novel combination, of the steps of any method or process so disclosed.

CLAIMS

1. A finger protector device comprising first, second and third members, the second member being connected  
5 between the first and third members by flexible means, the first member is arranged, in use, to be mounted to a first surface and the third member is arranged, in use, to be mounted to a second surface, in which relative movement of the first and second surfaces is  
10 possible.
2. A finger protector device according to Claim 1, in which the flexible means provides a pivotal connection.  
15
3. A finger protector device according to Claim 1 or Claim 2, in which the relative movement of the first and second surfaces creates or close a gap between the surfaces.  
20
4. A finger protector device according to any preceding claim, in which the first surface is a door.
5. A finger protector device according to any preceding  
25 claim, in which the second surface is a door frame.
6. A finger protector device according to any preceding claim, in which the first, second and third members are elongate members.  
30
7. A finger protector device according to any preceding claim, in which the first member has a mounting

portion connected thereto and is connected by flexible means.

- 5 8. A finger protector device according to any preceding claim in which the third member has a mounting portion connected thereto and is connected by flexible means.
- 10 9. A finger protector device according to Claim 7 or Claim 8, in which the or each mounting portion or portions is or are thicker than the first, second and third members.
- 15 10. A finger protector device according to Claim 7 or Claim 8, in which the or each mounting portion or portions is attached to a member by a flexible plastics joint which is pre-biased at about 90° relative to the member to which it or they is or are attached.
- 20 11. A finger protector device according to Claim 7 or Claim 8, in which the first and second surfaces may have slots mounted thereto in order to engage the mounting portions of the first and third faces respectively.
- 25 12. A finger protector device according to Claim 7 or Claim 8, in which the door frame is connected to a first mounting portion which is pivotally connected to the first member which is pivotally connected to the second member which is pivotally connected to a third member which is pivotally connected to a second mounting portion which is connected to a door, in which the first, second and third members and the
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first and second mounting portions are all elongate members, and in which the finger protector device has a substantially uniform cross-section along its length.

5

13. A finger protector device substantially as described herein with reference to the drawings that follow.



Application No: GB 9911354.0  
Claims searched: 1 - 13

Examiner: P. Gardiner  
Date of search: 28 July 1999

## Patents Act 1977 Search Report under Section 17

### Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.Q): E1J: JGR

Int Cl (Ed.6): E05D, E06B

Other: Online: WPI, PAJ, EPODOC

### Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
X,Y	GB 2314112 A SANKEY & YEOMANS (e.g. Fig's. 1-3)	X:1-8,11,12 Y:9,10
X,Y	GB 2265929 A MARCHINGTON (e.g. Fig's. 3 & 4)	X:1-8,12 Y:9,10
X,Y	GB 2254355 A RENTON (e.g. Fig.3)	X:1-8,12 Y:9,10
X,Y	NL 8303162 HOUWELING (e.g. Fig.2)	X:1-8,12 Y:9,10
Y	WO 98/19037 A1 HELLSTROM (e.g. Fig.1 attachment leg 41)	Y:9
Y	GB 2138478 A MAGUIRE (e.g. Fig.1)	Y:10

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.

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